

CLAIMS

What is claimed is:

- SUB A1*
- Sub B1*
- Sub C1*
- Sub D1*
- Sub E1*
- Sub F1*
- Sub G1*
- Sub H1*
- Sub I1*
- Sub J1*
- Sub K1*
- Sub L1*
- Sub M1*
- Sub N1*
- Sub O1*
- Sub P1*
- Sub Q1*
- Sub R1*
- Sub S1*
- Sub T1*
- Sub U1*
- Sub V1*
- Sub W1*
- Sub X1*
- Sub Y1*
- Sub Z1*
1. A method of approximation of respective colors of pixels of a digital image, the method comprising selecting, from a look-up table and successively for each pixel, a color having a code which comes close with the smallest error to the sum of the code of a current pixel color and of a correction term, wherein the correction term is equal to the smallest error calculated upon approximation of a preceding pixel, assigned with a weighting coefficient depending on the position of the current pixel in the image.
2. The method of claim 1, wherein the weighting coefficient is a function of respective least significant bits of binary codes representing an abscissa and an ordinate of the position of the current pixel.
3. The method of claim 2, wherein the weighting coefficient is chosen:
from among a first and a second value when the least significant bit of the abscissa of the position of the current pixel is null and when respectively, the least significant bit of the ordinate of the position of the current pixel is null or equal to one, and
from among a third and a fourth value when the least significant bit of the abscissa of the position of the current pixel is equal to one and when respectively, the least significant bit of the ordinate of the position of the current pixel is null or equal to one.
4. The method of claim 3, wherein:
the first value is equal to 0.25,
the second value is equal to 1.00,
the third value is equal to 0.75, and
the fourth value is equal to 0.50.

Sub A2

5. The method of claim 1, wherein the image is scanned line by line, and the correction term is null for the first pixel of each line.

6. An electronic circuit for approximating the respective colors of pixels of a digital image, including means for implementing the method of claim 1.

Sub B1

7. The electronic circuit of claim 6, wherein the means include:
a memory in which are stored codes of colors of the look-up table, coded in the same way as the pixel colors;

an evaluation circuit having a first input that receives a color code from the memory and a second input that receives the code of a pixel of the image plus a correction term, the evaluation circuit selecting the stored color having the code that comes close with the smallest error; and

a correction circuit, an input of which is connected to an output of the evaluation circuit, for generating a corrected code, equal to the sum of the code of the color of a current pixel and of the correction term.

8. A method of compressing a digital image having pixels each with a color represented by a color code, the method comprising:

selecting, for a current one of the pixels of the digital image, one of a plurality of weighting coefficients based on a position of the current pixel;

computing a sum of a correction term and a color code of the current pixel, the correction term being equal to an error value computed for a previous one of the pixels multiplied by the selected weighting coefficient for the current pixel;

selecting for the current pixel an estimated color from a plurality of estimated colors, the selected estimated color being the estimated color that most closely matches the computed sum; and

replacing the color code of the current pixel with the selected estimated color.

9. The method of claim 8, further comprising computing for the current pixel an error value equal to a difference between the computed sum and the color code for the current pixel and using the computed error value for the current pixel to compute a correction term for a subsequent one of the pixels.

10. The method of claim 8 wherein the position of the current pixel has an ordinate value with a first least significant bit and an abscissa value with a second least significant bit and the selected weighting coefficient is selected as a function of the first and second least significant bits.

11. The method of claim 10 wherein selecting the weighting coefficient for the current pixel includes:

selecting from among a first and a second value when the first least significant bit is null and when respectively, the second least significant bit is null or equal to one; and

selecting from among a third and a fourth value when the first least significant bit is equal to one and when respectively, the second least significant bit is null or equal to one.

12. The method of claim 11 wherein:

the first value is equal to 0.25;

the second value is equal to 1.00;

the third value is equal to 0.75; and

the fourth value is equal to 0.50.

13. The method of claim 8 wherein the digital image is scanned line by line, and the correction term is null for a first pixel of each line.

14. The method of claim 8 wherein the weighting coefficient selected for the current pixel is not selected for any pixels that are immediately adjacent to the current pixel.

Sub P4

15. A method of compressing a digital image having pixels each with a color represented by a color code, the method comprising:

assigning a first correction coefficient to each pixel of a first group of pixels in the digital image;

assigning a second correction coefficient to each pixel of a second group of pixels in the digital image;

for each of the pixels of the first group, selecting an estimated color of a plurality of estimated colors, the selected estimated color being selected based on the color of the pixel and the first correction coefficient; and

for each of the pixels of the second group, selecting an estimated color of the plurality of estimated colors, the selected estimated color for the pixel being selected based on the color of the pixel and the second correction coefficient.

Sub P5

16. The method of claim 15 wherein the pixels of the first group are not contiguous with each other and the pixels of the second group are not contiguous with each other.

17. The method of claim 15 wherein the step of selecting an estimated color for each pixel of the first group includes, for each pixel of the first group, computing a sum of a correction term and a color code of the pixel, the correction term being equal to an error value computed for a previous one of the pixels of the digital image multiplied by the first correction coefficient; the selected estimated color for the pixel being the estimated color that most closely matches the computed sum.

Sub P6

18. The method of claim 17, further comprising, for each pixel of the first group, computing an error value equal to a difference between the computed sum for the pixel and the color code for the pixel and using the computed error value for the pixel to compute a correction term for a subsequent one of the pixels of the digital image.

Sub P7

19. The method of claim 15 wherein the pixels of the first group alternate with the pixels of the second group in the digital image.

20. The method of claim 15, further comprising:
assigning a third correction coefficient to each pixel of a third group of pixels in the digital image;

assigning a fourth correction coefficient to each pixel of a fourth group of pixels in the digital image;

for each of the pixels of the third group, selecting an estimated color of the plurality of estimated colors, the selected estimated color for the pixel being selected based on the color of the pixel and the third correction coefficient; and

for each of the pixels of the fourth group, selecting an estimated color of the plurality of estimated colors, the selected estimated color for the pixel being selected based on the color of the pixel and the fourth correction coefficient, wherein the pixels of the first and second groups alternate with each other in a first line of the digital image and the pixels in the third and fourth groups alternate with each other in a second line of the digital image, the second line being immediately adjacent to the first line.